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ON CONSCIOUSNESS.

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(ABSTRACT.)

THE present classification of modes of consciousness into cognitive, affective and conative modes is recognized as unsatisfactory. The cognitive consciousness, in so far as it involves self-activity, is itself conative. The affective consciousness comprises far more than affective tone—pleasure and displeasure. (Indeed, I consider it doubtful whether these two are as primitive and elementary as has hitherto been supposed.) It may cover every kind of feeling, not merely emotional, but also intellectual—feelings of familiarity, certainty, relationship, &c. A more acceptable scheme, if it included feeling, would be to classify the modes of consciousness on the basis of a distinction between doing and what is done, between the act or process and its product, e.g., between the act of remembering and what is remembered, the process of sensing and the sensation, &c. According to this scheme, consciousness is classifiable along the lines of self-activity and the outcome of self-activity.

It is fairly obvious that if only one response to a given stimulus were possible, consciousness would be of little value and would hardly have arisen. Its utility arises when (*a*) alternative reactions are possible, (*b*) when some sort of choice has to be made between them for the benefit of the organism as a whole, and (*c*) when, as in an important emotional situation, it is essential that no other conflicting reaction be made by the self to another simultaneous experience.

Consciousness is thus a selector, by the individual, of alternative *responses*. It is also a selector of alternative *stimuli*. If, owing to uniformity of external conditions or to the immobility of the organism, the organism were unable to alter its relation to the environment, consciousness again would hardly have arisen. One of its most important functions is to maintain an environment that is favourable and to avoid one that is unfavourable, whether that environment be a physical one, say in the form of external nourishment or temperature, or a mental one, say in the form of appropriate or noxious thoughts.

These, then, are the main functions and conditions of consciousness; and in realizing them we realize still more clearly how all consciousness must form part of "self-consciousness," by which I mean not necessarily the knowledge, the awareness of the self, but the involvement of that highest integration of activities which is known as the self within the indivisible, "individual" organism. Consciousness thus functions as the co-ordinator of all the past and present experiences of the organism so as to give direction to the selection of its future activities and environment, in compliance with the organism's sanctions and ends.

It has been too common an error to regard the simple in life as prior to the complex. We are apt to forget that the most lowly unicellular organism eats, breathes, secretes, excretes, reproduces, and exhibits irritability, contractility, and even apparent choice and ability to learn by experience, whereas in the higher organism such functions are specialized in its different tissues. The vague complex,

in other words, precedes the differentiated simple complex. So it is largely in the life of consciousness. Simple sensations are not the first experiences. The first post-natal or even pre-natal experiences are vague affections of the self—or of what will come in time to constitute the self, as later it becomes differentiated from external situations, and as later external objects come in turn to be differentiated from external situations. At quite an early period many of the infant's experiences, especially the visual, become "projected" first as situations, then as objects, instead of being, as at the very outset, little more than affections, so to speak, of the self. It is only gradually that the separate, simple sensations, say of whiteness, softness or sweetness, are differentiated from these objects. But sensations, we must remember, are not wholly projected. Red, for example, clearly resides in the object, but pain lies in ourselves, while such sensations as those of temperature and taste occupy a half-way position.

The observations of Head and Gordon Holmes, in conditions of thalamo-cortical interference, indicate that this projection may be lost in lesions of such sort. A prick may be no longer projected as such, but described by the self as a characteristic change in an affection of itself. Indeed, under normal conditions, the less projected the sensation, the more it approximates to an affective modification of the self. Titchener is doubtless right in believing that sensations (hence cognitive states in general) have become evolved out of a consciousness resembling feelings.

I believe that this power of projection, the ability of the self to regard its own change of state as something outside itself, is of far greater importance than is generally supposed. It surely culminates in the self looking down, not merely on external independent objects, but also on its own *other* selves who come to be regarded as acting under its jurisdiction. Thus, the most consummate actor is said to be he who, though he feels the emotions he portrays, experiences them in such a way that it is as if he were looking upon another self that actually felt them. Thus, too, "sportsmanship," "fair play," tact, &c., become possible. Something of the same effect, though doubtless of different causation, is observable in that transient, slightly pathological condition known as "depersonalization," common to large numbers of us, wherein the external environment appears for the moment as strange, and we seem to be looking on another instead of on ourself as really experiencing it and acting on it. It occurs still more strikingly, of course, in the more definitely morbid condition of loss of reality. Similar processes may account for the alternation of personalities behind which there lies a continuous personality that knows the acts and experiences of the others. The well-known limits of suggestibility in the post-hypnotic state indicate the same preservation of a higher, dominant, however dormant, self. The integrity, the intactness of this supreme self may prove, I even suggest, to be the future criterion between so-called psycho-neurotic and psychotic conditions.

While the simple is, so to speak, distilled from the wider complex, nevertheless synthesis goes on as well as analysis; and many instances will easily occur to my audience in which new experiences are dependent on an integration of stimuli or of more primitive experiences. On the one hand, where a reflex occurs or a habit is acquired, consciousness is useless, since the stimulus inevitably releases one and only one reaction. On the other hand, where an instinct appears, consciousness (let us call it *instinct feeling*) is essential, because intelligence can be brought to bear so as to improve by growing experience the instinctive reaction to the *situation*. Where emotion enters, the number of alternative conflicting, instinctive reactions to a stimulus has become manifold, e.g., in the case of fear, flight, rigidity, flaccid palsy, crying, clinging to the parent, fighting at bay; and their respective instinct feelings become integrated about a common *object* on this higher plane to create *emotional feeling*. Where sentiment enters, a number of alternative emotional feelings have

become integrated about a common *idea*, and a new *sentiment-feeling*, e.g., that of love or hate, emerges.

The importance of the integration of such alternative, often conflicting mental states, as the creator of new ones, can hardly be overestimated. Rivers has, from the ethnological standpoint, attributed new cultures to the clash of immigrant with indigenous ones ; and it seems possible that the creations of the inspired genius may be the unconscious product of similar conflict.

Let us now consider what we know of the activity of living substance. It exists in two forms—(i) intensive and momentary, (ii) moderate and prolonged. The contractions of striated muscle illustrate intensive and momentary vital activity ; the reactions of heat and cold spots offer another example. There appears to occur a firing-off of already-prepared, explosive material, followed fairly rapidly by fatigue. The contractions of unstriated muscle illustrate the more moderate and prolonged form of activity, where tone and long-continued adaptation seem to replace the explosive force and consequent fatigue characteristic of the first-mentioned form. Again, the tone and posture in striated muscle, both of them moderate, long-continued and relatively indefatigable, illustrate the same form of activity. They involve a directive balance, a delicate nervous co-ordination between two opposing muscles, flexor and extensor. The sensations of warmth and coolness depend on a similar mechanism. In contrast to the *spot* system subserving heat and cold, this *diffuse*, spotless sensibility involves a close co-ordination between the mechanisms for warmth and coolness, as is exemplified first in the set state of balance that occurs in the form of “sensory adaptation”—a kind of stationary “posture,” as it seems to me, between the opposing mechanisms of warmth and coolness, when the skin is exposed for some time to a warm or a cool environment—and, secondly, in the action resulting from disturbance of that balance, as occurs in the form “sensory contrast,” when that environment is suddenly replaced, say, by a neutral one. Such phenomena as adaptation and contrast do not occur in the spot system ; there we have merely sudden, ungraded reaction and fatigue.

Thus we come to contrast powerful, energetic, explosive acts, followed by a loss of available material for the allowance of further acts, on the one hand, and the more moderate, more graded activities, on the other hand, involving reciprocal inhibition and facilitation, and finally yielding a long-continued “set” or state of adaptation or attitude.

May we not usefully distinguish these two forms throughout mental activity, even up to the highest conscious processes ? In other words, have we not, on the one hand, the momentary, relatively fatiguable acts of apprehension, recall, decision—of action, in general—and on the other the long-continued, relatively persistent sets or attitudes—mental *postures*, if you like—in which those varying acts take place ? On the one side we have the more mechanical acts, on the other the more directive attitudes, though, of course, the acts themselves are far from being devoid of a certain co-ordination and direction. We recognize thus in mental activity a more mechanical factor and a more directive factor, each involving the expenditure of work ; but whereas we have some conceivable idea of the nature of the former, we have none whatever of the nature of the latter.

We might well pause, did time permit, to consider what is the effect of profound morbid changes in attitude on the consciousness of acts. Two obvious and opposite directions of change at once present themselves. At the one extreme, attitude is unusually persistent and unvaried : according to the old dictum, *semper idem sentire ac non sentire idem est*. At the other, attitude is to all intents and purposes non-existent ; the mental acts follow one another over a vast field whose meaning is changing with bewildering speed.

The early neglect of the importance of affects has resulted, I think, in an

exaggerated swing of the pendulum of opinion to the opposite extreme. It is, I think, ridiculous to suppose that the energy informing our actions is derived solely from our affects. We may, however, reasonably consider the view that, using the term in its widest sense, our attitudes serve as keys that unlock the energies resident in our acts. It is also ridiculous to suppose that our acts depend for their energy on drainage from one set of channels to another. The modern studies of repression alone suffice to prove that censoring, as the Freudians term it, involves actual work in the imposition of resistance. The mind is not comparable, as according to McDougall, to a vast sewerage system, in which the active channels drain off energy from those which are *ipso facto* rendered inactive; inhibition involves as much work as excitation.

The same exaggerated importance of the affective consciousness has led to the attribution of all forgetting, every slip of the tongue, to emotional conflict and inhibition. Surely prolonged laboratory experience in learning large numbers of senseless syllables, or in rapidly naming long series of familiar objects, suffices to show the extravagance of this view. Deterioration or disorder in cognitive processes is not always dependent on affective factors. We must recognize that the act may suffer through excessive exercise, as well as through inhibition; at the same time fully admitting that the attitude which suffers mainly through flagging interest or conflicting feeling may also thus influence the act.

That some central factor of general intelligence exists depending on the functioning of the highest system of mental activities known as the self, there can be little reasonable doubt. But its conception is also commonly bound up with that of localizing the various conscious processes, which are *not* those of general intelligence, in different regions of the brain. For generations past, it has been customary to believe in special centres for the various motor, sensory and perceptual activities involved in speech, and to regard them as "seats of consciousness," connected with one another and presumably with that highest central centre of the self or ego. It is interesting to find that the recent researches into aphasia by Head have enabled him to produce cogent evidence against such a view. For my own part, in my Cambridge lectures, I was long accustomed to protest against it by means of the following illustration: if I wanted to travel by rail from Cambridge to King's Cross, it would be essential for me to pass through Hitchin. A block at Hitchin would prevent my arrival at King's Cross. But I should not be justified in confusing Hitchin with King's Cross and in transferring the block at Hitchin to King's Cross. So too, if a certain occipital area must necessarily function in order that, say, an apple may be perceived as such, I should not be justified in describing that area as a "visuo-psychic centre," because I fail to apprehend an apple when that area is disorganized. All that I can legitimately infer is that that occipital area is essential for visual perception, just as Hitchin is essential for me to reach King's Cross. Seats of different consciousness must not be thus fallaciously localized in relatively small different areas of the cerebral cortex.

A similar error endangers Head's earlier conjecture (in his work with Gordon Holmes) that the thalamus is the "centre of consciousness for certain elements of sensation¹," which he infers from the results of interference of the normal connexions between the thalamus and the cerebral cortex. No doubt he would himself admit that if we interfere with a small part of the central nervous system, it is impossible to suppose that that part remains the seat of conscious processes. Consciousness depends on the self. The activities of the thalamus can only affect consciousness by forming part of those activities which contribute to those of the self. All that we can safely infer is that when the thalamus is "separated" from the cerebral cortex its activities affect the self in a manner different from that in operation when its

¹ *Brain*, 1911-12, xxxiv, p. 181.

normal relations to the cortex are intact. We cannot posit a "centre of consciousness."

This brings me, in conclusion, to a brief study of the nature of consciousness itself. There was a time when mind was regarded as the product of the brain just as bile is regarded as the product of the liver. This was succeeded by an age when mind and living matter were considered to be so absolutely different in character that for this, if not for any other, reason, it seemed absurd to compare mind with bile as a secretion of living substance. Instead, there grew up, on one side, the theory of psycho-physical parallelism—that mental and neural processes are two different aspects or reflexions of one and the same unknown activity—and, on the other side, the theory of interactionism,—that so far from being parallel they are independent and may each, according to circumstances, influence and control the other.

Times have now changed. Substance proves no longer as "substantial" as it appears. We are no longer content to regard matter as composed of solid atoms. The structure of the atom is now revealed to us as a constellation of ions, each of which appears to be merely a *point d'appui*, of definite size, for a charge of electrical energy, thus endowing the "point" with inertia, mass, weight, &c.

What now of mind? Might not this likewise be a manifestation of energy? Is the difference between mind and matter so fundamental as it appeared a hundred years ago? Are not the hidden *activities* of mind and matter of greater import than their more obvious *products*? Are not the respectively material and mental characters of these products due ultimately to the activity of mind itself?

When we come to consider the difference between mind and *living* matter, the distinction is reduced almost to vanishing point. For there are essentially the same purposive, directive, plastic and constructive characteristics, distinguishing living from dead matter, which, raised to a still higher power, distinguish both nervous and mental activity from the activity of other living tissues. The problems of life that confront the physiologist are precisely those of mind that confront the psychologist. Life and mind must ultimately be solved in similar terms. From each we can abstract the mechanical, comparable to what we know of the activities of lifeless matter. But it may well be that the apparently blind mechanism of which physics treats is only an abstraction from a purposeful direction that plays its part in the larger universe regarded as an organism, just as we are bound to conceive of such direction even in the lowest living individuals, even in the lowest physiological levels of the higher, living organisms.

With progressive evolution of these various levels have "emerged," according to the recent terminology of Lloyd Morgan and Alexander, the various levels of mental activity. It may be that the term "differentiation" will often be found more useful than that of "emergence," so often is the new really pre-existent—though in a primitive, vague, undifferentiated state—in the old. But, admitting also the "creation" of new forms with the progress of evolution, may we not sometimes regard the mechanical forms of activity as being really a degradation of still higher forms? Because electrical energy is the only energy in which that of the nervous system reveals itself to us, can we deny the possibility that this is a degradation of some higher, what I may term "psycho-neural," energy, which assumes a more psychical character in the highest levels of the nervous systems of the most highly organized individuals whose wider and more plastic areas are more complexly integrated together to function as a single entity?

These are among the problems which seem to be worthy of consideration in the broader study of consciousness.

